ELECTRICITY on the FARM

The National Magazine of Rural Electrification

OCTOBER

Brooders to Build in Your Shop
You Can Have the Good Old Days
Potato Leader Saves Two Men
Electro-Farm Equipment for War
More About Poultry Debeaking
Brown-Out—To Save Coal
Electrical Housekeeping Pointers

1943

A CASE - SHEPPERD - MANN PUBLICATION

Enough to Go Around

NOW, for the first time in years, both farmers and manufacturers can work for the biggest possible yield without thinking about the market. This year they can sell all they can produce.

As things look now, this condition is due to keep up for some time, but we can't count on its lasting forever. *Certainly nobody wants a prosperity built on war!* So it's high time that everybody concerned—and that is *everybody*—gave some thought to keeping things running after the war.

You're busy, we know. So are we. The important thing right now is seeing that there's enough of everything to go around. But we've been devoting a little attention to the problems of the future, too. We feel that the people who have the producing job to do can contribute a lot to the solution of those problems.

And we hope that you, too, busy as you are with growing more food than this country's ever produced, will be turning these problems over in your mind. For if America's farmers and manufacturers, working together, can't find a way to keep the richest country on earth producing enough for everybody, and let the producers make a living in the process—if they can't, why then, who can? *General Electric Co., Schenectady, N. Y.*

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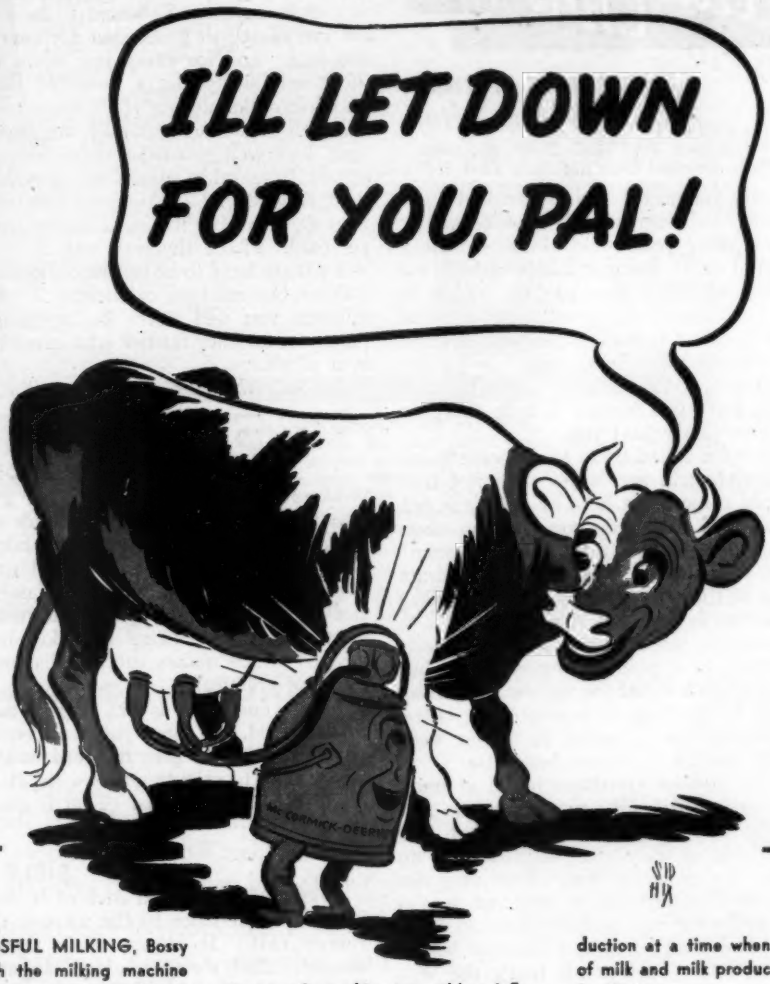

FOR SUCCESSFUL MILKING, Bossy must like both the milking machine and the operator. That's the No. 1 rule. When that happens, Bossy naturally responds by giving more milk. It's a case of three-way co-operation between the cow, milker, and dairyman.

McCORMICK-DEERING MILKERS help obtain maximum milk production because of these "cow-comfort" features: soft, cushion-top rubber inflations; uniform weight distribution from each teat; dependable pulsator; and trouble-proof vacuum regulator.

Make milking time a quiet time for your cows. Add to this the right feed, good care and handling, and a McCORMICK-DEERING MILKER. The result will be increased milk production at a time when extra pounds of milk and milk products are needed for Victory.

* * *

Ask the International Harvester dealer how you can obtain a new McCormick-Deering Milker or International Milk Cooler.

INTERNATIONAL HARVESTER COMPANY
180 No. Michigan Ave. Chicago, Ill.

Buy War Bonds... Save and Serve America

McCORMICK-DEERING MILKERS

Editor's Chat

SOME GREAT THING

II Kings, 5:13

"If the prophet had bid thee do some great thing wouldst thou not have done it?"

Certainly you would have! If called upon right now to do some great and heroic or dangerous thing you would almost certainly have a shot at it. Because Elisha asked him to do nothing more than to "Go Wash in Jordan," Naaman, the great warrior, was very wroth. He was mad all the way through and he turned away in disgust. If Jordan had been guarded by soldiers eight feet tall he would have had himself a bath there or died trying. So would you.

If you were called upon to do some great thing, the chances are better than not that you would come out a hero or not come out at all . . . but . . . how do you stack up when it comes to plain old fashioned endurance? With a shortage of tools and a desperate shortage of time, do you have what it takes to keep you in there fighting?

You may be just a plain, ordinary American Farmer in a pair of torn overalls, but if you can't stick it out for this year and next year and for as long thereafter as it takes, then nothing else is going to matter very much . . . to you . . . or anybody else.

All of a sudden you have found yourself with a big world family on your hands . . . a hungry family that needs to be fed, and there is just nobody else anywhere to do the job. It's all up to you. That may not be entirely fair, but this is war and war is never fair. You may possibly have to work longer hours and carry a somewhat bigger load than some others, but that's the way war is.

War creates injustice and inequalities . . . it always has and it always will. War is an incubator that hatches mistakes and blunders because too many decisions have to be made too fast. That is especially true of America because war has never been our main business; but from now on and for some time to come it is going to be our main business.

War brings out the best and the worst in people, so there is bound to be a certain amount of selfish greed, but for every louse and loafer and for every low down chiseler there will always be a thousand men who will do to take along.

In all this mad scramble you may have been less well rewarded than some, while others have taken much more punishment than you have. . . . Many of the very men who *died* to give us this country never *did* get paid. That's the way war is . . . there will always have to be not just one Unknown Soldier but millions of them . . . of which millions you will never be anything more than just another farmer who came through in a pinch.

Possibly *that* is a very Great Thing.

Condensed from an editorial by Geo. Mather in Surge News. We could not write a better one.—G. W. K.

FEED SHORTAGE

The feed shortage may do some good.

It has focused attention on beak shortening as a means of saving feed while at the same time debeaking is reported to be responsible for lower mortality, faster gains and higher grading fryers at the market. A new electric cauterizing debeaker has been devised which makes the surgical operation safe and practical.

Severe culling of layers may be necessary to save feed. If there just isn't enough for all, it is better to give the feed to the good layers than to cripple along with all of them on an-egg-a-week basis. That is good management.

BIBLE WEEK

The Book, with God back of It, was comfort and sustenance to the men in the little rubber raft. It always is in the face of danger. And, we always face danger. Bible Week is October 11-17.

This is the month to clean up and prepare to prevent farm fires.

Geo. W. Kable

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SKYLARK FARM KITCHEN

Every War Bond you put aside today means *more* equipment tomorrow for that Hotpoint Electric Kitchen you want! The convenient, roomy kitchen with Hotpoint Electric Range, Refrigerator, Electric Dishwasher, Hotpoint Sink and Steel Cabinets will make life more pleasant, *in* and *out* of the kitchen!

Someday our WAR BONDS *will buy us an* ELECTRIC KITCHEN *like this*

IT'S GREAT, these trying days, to have two good things to look forward to . . . Victory that our War Bonds are helping to bring, and the Hotpoint Electric Kitchen that our War Bond Savings are going to buy after the war.

Part of every livestock check goes for War Bond Savings. Today's skimping will have been worth while when Hotpoint's war work is over and we get our modern kitchen with its time-saving, work-saving convenience.

BUY WAR BONDS TODAY—
an Electric Kitchen Tomorrow!

Edison General Electric Appliance Co., Inc.
5610 West Taylor Street, Chicago 44, Ill.

For outstanding achievement in War Production

ELECTRIC Hotpoint KITCHENS

Brooders to Build in Your Shop

EACH winter FFA and boys in their high school vocational shops build chick brooders for practice in construction of useful farm equipment. There are also some farmers who like to build their own equipment, and some who because of shortages of commercial brooders must either build or go without. From present appearances, there will be a much better supply of manufactured brooders of tested designs available this fall and winter than last year. But for those boys and men who want to build their own, we present these plans.

The illustrations and much of the descriptions of the two lamp brooders are adapted from a circular put out jointly by the G.L.F., the Pennsylvania Farm Bureau Co-operative Association and the Agricultural Engineering Departments of New York, New Jersey and Pennsylvania State Colleges. The brooder using the two heat lamps is a design of the Ohio Agricultural Experiment Station at Wooster, Ohio. It has been built and used in many parts of the United States with good results. The two fan type units are popular throughout the country and have had a number of years of practical use on farms.

A Standard Hover Design

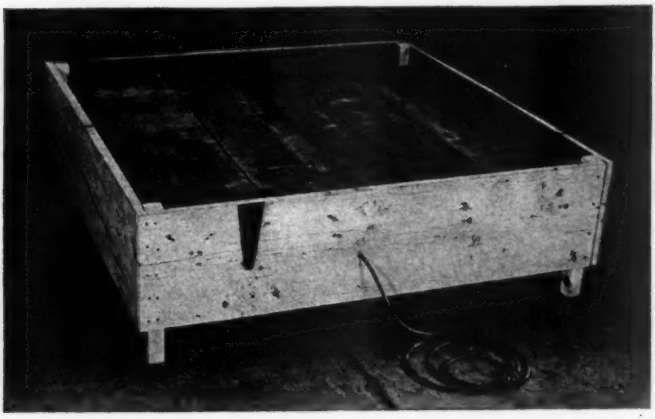
The hover shown in the drawing and accompanying photograph may be accepted pretty much as a standard design. It is easy to build, efficient, and may have installed in it any one of a number of different types of heating elements. It may be built of plywood, wall or insulating board having structural strength, or of one-inch dressed lumber. Plywood is a little easier to keep clean and free from mites and lice than lumber. Where the lamps or other heaters are placed on the under side of the hover, the top may be filled with litter which serves both as insulation for the hover and extra floor space for the chicks. In using fan units, the sides of the hover may be fitted under the top boards as shown in another illustration, and a hole cut in the center for the fan unit. When using a fan unit, the top may also be of double construction with paper between for additional insulation.

The hover is four feet square, outside dimensions. It will accommodate 200 to 300 chicks. With 200, each chick has 10.6 square inches of space; with 250, 8.5 square inches; with 300, 7.1 square inches.

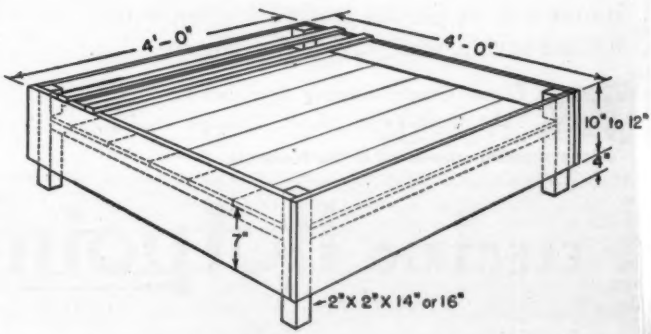
Brooders With Fans

Many poultrymen prefer brooders with air circulating fans. Some will use no other kind. The purpose of the fan is to circulate and distribute the heat and to keep the air stirred up. It also brings in fresh air and discharges some of the humid, used air. Fans were first introduced into brooders to overcome damp litter and to improve ventilation. They help to provide uniform heating, and by recirculating some of the air under the hover may reduce the amount of electricity used.

The Lyon Rural Electric Co. and the Trumbull Electric Manufacturing Co. both make brooder heating units with fans which are

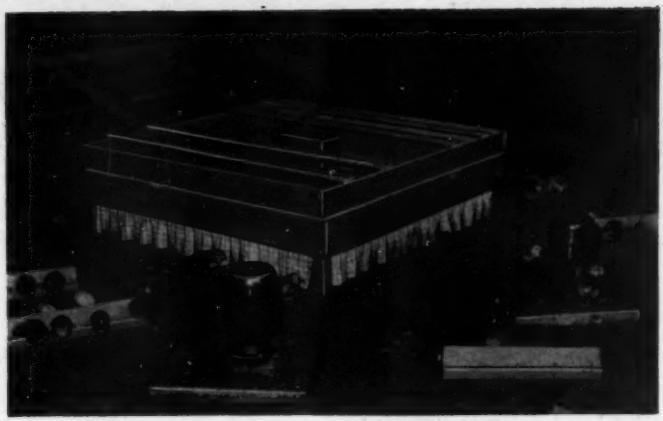


Above: Completed hover made of 1" boards. The top boards should be tight for sanitation and to keep litter from sifting through. Litter on the top serves as insulation for the hover and added floor space for the chicks.



Right: Sketch showing construction and dimensions of the hover. If a 4' x 8' piece of plywood or wallboard is used, one-half will make the top and the other half the four sides. With lumber, use flooring or shiplap for the top.

A Trumbull Brooderator installed in a 48" x 48" hover, with removable top for holding litter. Also chick roosts in place.



shipped complete with temperature controls ready to install in a homemade wood hover. The standard hover may be used, or the hover may be built according to plans which accompany the heating units. Both are similar except for the size and shape of the hole in the top into which the unit is fitted. These complete units cost under $20. The Lyon Company also makes several other types of heating units without fans which may be installed in homemade hovers.

Ohio Heat Lamp Brooder

Lamp sockets are placed in the standard hover on two opposite sides or in opposite corners. The sockets should be tipped out at the top to throw the heat rays downward onto the chicks as shown in the illustration. Use porcelain sockets. They stand heat well, are sanitary, will not corrode and there is practically no chance to get shocks from them. A number of suitable styles are illustrated.

The lamps recommended for this brooder are one 250 w, R-40 Reflector Drying Lamp listed at $1.75 and one 150 w, R-40 Mazda Reflector Flood Lamp listed at 95c. (Reflector drying lamps of 150 w size are not available.) The illustrations show what these lamps look like. The glass of the lamp is silvered inside and forms its own reflector.

Four Types of Heat Lamps

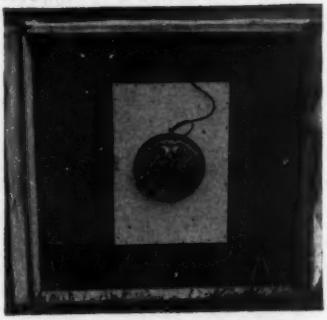
Four types of lamps may be used for producing heat. First are the new heat lamps with only the R-40, 250 w size generally available; next are the drying lamps which are made in clear glass non-reflecting types from 100 w upward and in 250 w size with reflector bowl; then comes the old carbon filament lamp which produces more heat and less light than Mazdas; and finally the standard low priced Mazda lamps in many wattages. Carbon filament lamps are still made but are not usually carried in stock.

The following table gives the approximate life and relative brightness of illumination of the different lamps.

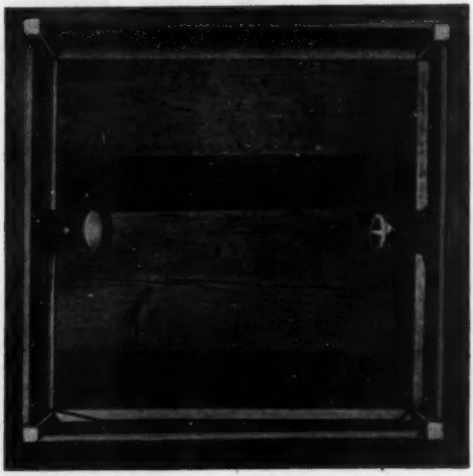
Type	Approximate Life	Relative Filament Brightness
Mazda R-40	1,000 hrs	100
Carbon filament	1,000 hrs	50 (est)
Reflector drying	Over 5,000 hrs	28.5
Reflector heat	Over 5,000 hrs	2.5

It is important to note that the drying and heat lamps have a very long life and give a relatively small amount of light. The longer the life of the lamp, the lower the lamp cost per season of use—and still more important, where only one or two lamps are used in a brooder—there is less likelihood of that lamp burning out sometime in the night and leaving the chicks cold.

Reflector-lamp heated brooders use no thermostats. The reason is that the chicks get most of their warmth from *direct* radiation of the lamps. Turn off the lamp and there is no heat. Therefore, the



Above: Under side of hover, showing one of the earlier model Lyon fan units in place. The thermostat is mounted on the edge of the hover. 660 watt and 880 watt units are available for 4' x 4' brooders up to 325 chicks and 6' x 6' brooders up to 700 chicks.



Under side of an Ohio heat lamp brooder. It uses no thermostat or thermometer. Chicks find their own zone of comfort. 250 w heat lamp on left, 150 w flood lamp on right. It is used without curtains.

lamps are not turned off and on by a thermostat. The secret of the lamp heated brooder is that it is *not uniformly heated.* There are warm spots and cool spots. Give the chicks plenty of room, i.e. do not crowd them, and they will adjust themselves between

250 w heat lamp with a ½" strip behind the upper edge of the porcelain socket to direct the heat rays downward.

warm and cool spots to suit their own comfort. Fill the brooder too full so they cannot move about, and it will not give good results.

In operating this brooder it is desirable to start with both lamps on. As the chicks grow or the weather warms, one lamp may be removed or lower wattage Mazda lamps substituted. When the chicks stay at the outside edge of the hover or out from under it, there is probably too much heat. The temperature may also be lowered by raising the hover. Never leave an empty socket in a brooder. It is a chick and fire hazard. Screw in a burned-out lamp.

Mazda Lamp Brooder

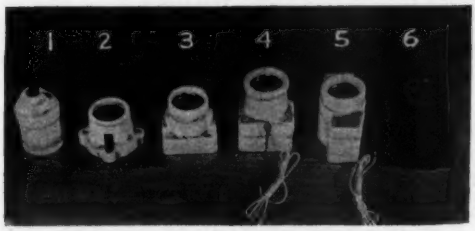
If reflector heat lamps are not available, the hover may be equipped with Mazda lamps totaling about 600 watts. Distributed over the hover as shown, they heat the air, the top and the litter and also provide radiant heat. A thermostat may be used, preferably on only part of the lamps, or the temperature may be adjusted by raising and lowering the hover, turning out some of the lamps or changing to different sizes. The wiring diagram shows three diagonal lights connected so they will be on continuously.

Merits Pro and Con

The many poultrymen who use these different types of brooders usually like the kind they have. Some have very decided preferences. For instance, users of fan type brooders generally claim better, more rugged chicks with the positive air movement and more uniform heat and less trouble from moisture in the brooder. Of even greater importance is the claim that giving the chicks a good start in the brooder results in greater vigor and reduced mortality in the mature birds throughout their productive life.

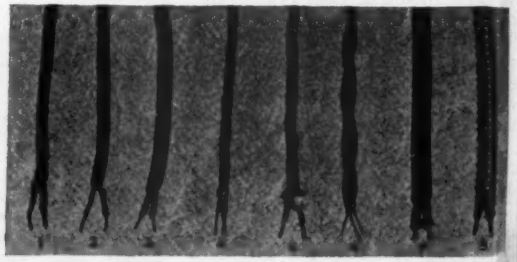
While some growers are opposed to bright light under the hover to the extent that they will use only red attraction lights, we know of no experimental evidence proving bright illumination under the hover to be detrimental. The lamp brooder has the advantage in lower first cost but the disadvantage of higher operating cost.

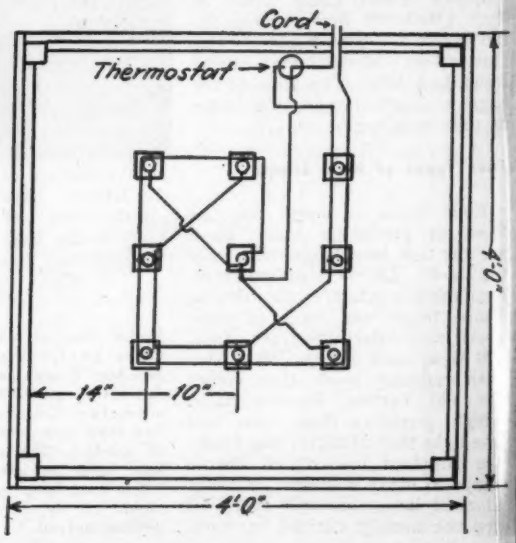
One thing is certain, namely, that growth and *livability* of birds are important factors in the financial returns of a poultry enterprise, and that these factors are influenced greatly during the brooding period. For good profits, one had better be sure he is starting with good brooding.



Above: Types of porcelain receptacles suitable for use in brooders. No. 1 is for suspending a lamp in the brooder house; the others are for mounting in the brooder.

Upper Right: Cords suitable for wiring brooders. No. 1 is braided extension cord with No. 16 wire; 2 and 3 are rubber-covered service cords with No. 16 wire; 4 and 5 are No. 16 asbestos insulated heater cords; 6 is two strands of No. 14 rubber-covered inside wire; 7 and 8 are non-metallic and metallic sheathed pairs of No. 14 wire. *Do not use* small lamp cords with No. 18 or smaller wire.





Right: Wiring diagram for Mazda lamp heated brooder. It is wired so the center and two corner lights remain on when the brooder is plugged in. The other six lights are controlled by the thermostat.

You Can Have "The Good Old Days"

A Story of How Electricity Has Made Farming Profitable, Pleasant and Worth While in Spite of Present Difficulties

By MR. and MRS. F. L. McELROY,
Route 1, Red Oak, Texas
as told to Mrs. J. Littleton Baker.

POSSIBLY it was good for us back in the horse and buggy days to have to get up in the cold darkness of winter mornings, light two or three oil lamps and three or four stove fires. Maybe we were hardier for having to go to the well outside the house for every bucket of water, and to work over the hot wood range and steaming washboard, but those years of comparatively long ago do not lure us back to them in the smallest degree. Give us electric lights, electric refrigeration, a range, a central heating system that will pretty nearly take care of itself, indoor plumbing, radio, good mechanical laundry, and we will trade the "good old days" for the good NEW days any day.

Strangely enough, it took access to high-line power to teach us a lot of interesting things about the good NEW days.

You see, when we were married we didn't have labor-saving equipment to ease our work. We kept three hired hands to help milk 20 dairy cows, feed 150 chickens, a bunch of hogs and tend our 150-acre farm. We had to get up and start milking about 4 o'clock every morning, then peddle our dairy products in town 35 miles away. Often it was midnight when we finished our daily tasks.

Gone are the old days with trips to town for ice, melting blocks that dripped a trail across the kitchen floor, and spoiled foods that resulted from half-refrigeration. Modern equipment has not only lightened and brightened our home, but with electricity doing a dozen different jobs on our farm we get along alone, with only one part-time hired man during rush seasons.

Our high-line power operates a pump, washer, vacuum cleaner, iron, range, food mixer, toaster, waffle iron, refrigerator and radio, and in addition we have good indirect illumination everywhere lights are needed to enable us to work without eyestrain. Our refrigerator is easily the most popular member of the "how-did-we-ever-get-along-without-it" class of kitchen equipment. You'd just be amazed at the amount of dairy products and eggs it keeps safely until we are ready to sell. Last winter we butchered a hog. Keeping it fresh was no problem at all. We've kept as many as six dressed chickens for days.

We could say as much for the range, washer, and the other things. All together, they have taken the place of our hired help and reduced our work until it takes little more than half as long. And it isn't half as hard.

Mr. and Mrs. McElroy in front of their electrically equipped Texas home. More equipment is scheduled for after the war.

"It is amazing the quantity of butter, eggs, chickens and pork it keeps fresh until we are ready to sell or use it."

Our electric washer does the hard work for 2 cents per washing. Our electric refrigerator preserves perishable foods and furnishes ice for 85 cents to $1.50 per month. Our electric ironer is operated for 3 cents per hour. An electric motor operates the cream separator for 15 to 25 cents a month, and another electric motor pumps all water for home and livestock for 90 cents to $1.10 a month. Our radio uses about 75 cents worth of electricity a month.

All of the electricity is not used in our home. A three-quarter horsepower motor operates the fanning mill; a one-quarter horsepower motor is used on a seed wheat and oat treater; a feed mill is operated by a five-horsepower motor. Night lights are used in our laying house. Other labor-saving devices include an electric drill, an electrically operated grindstone, and finally, our electric milking machine which saves half the time and labor of milking.

Lamps Catch Bugs for Ducks

I cannot help mentioning one more way electricity is helping us. Back of our dairy barn is an immense dirt pond. There are frogs and fish of many sizes in this pool and our ducks stay on the water most of the day. So we strung two electric lines across this pool, in the shape of an "X" with light bulbs about 12 inches above the water. Insects, attracted by the lights at night drop in the water by the millions. You should see how the frogs, fish and ducks go after them. Usually we had to dig down into our pockets to feed them. Now they feed us. At 8 to 10 weeks most ducklings weigh 5 to 7 pounds.

We want still more, including electric sewing machine, electric fan, and an electrically operated milk cooler.

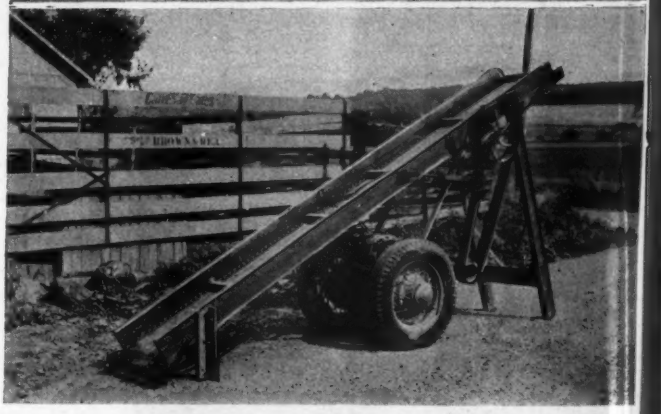
Without mechanized farming and homemaking we would have to keep two or three hired farm hands and a hired girl. With it, we get along alone, and can 500 quarts of food a year. That may sound like a lot of hard work for two, but when power does the heavy work we have strength to do the rest and also to take the part we feel should be ours in social and community activities.

Potato Loader Saves Two Men

Built from Parts of Old Machinery, Ford Wheels, No. 55 or No. 62 Chain and a 1 HP Motor. May Be Used for Baled Hay.

By **STANLEY BIDLACK**
Coatesville, Pa.

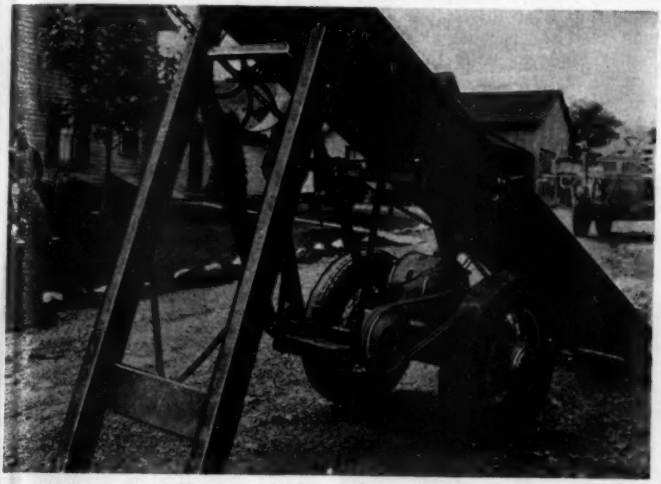
JOHN N. STOLTZFUS, who designed and built the loader shown in these illustrations, operates three good Chester County farms, near Parkesburg, Pennsylvania. One of his specialties is potatoes and he made the elevator to help handle this crop more expeditiously. Since he has more than 56 acres this year, and they are as fine as he has ever raised, first class equipment, kept in first



Above: Mr. Stoltzfus and his boy by the completed elevator. This view shows the speed reducing shafts and pulleys and the method of supporting the elevator. There are two jack-shafts between the motor and elevator drive pulley. We do not know the pulley sizes but they appear to be about 3" on the motor to 9" on the first shaft, then 5" to 18" and finally V pulleys 4" to 10" which would give a conveyor speed of about 30 feet per minute. **Below:** Conveyor showing the anchor legs at the lower end, the spacing of hardwood flights and the belt tightener. No. 55 or No. 62 chain is used with A-1 special links for attaching the flights.

class shape, will be worth a lot.

Starting with an electrically operated seed cutter, all the way to the final loading of graded bags of potatoes on trucks, all the work is completely mechanized. In spare



Close-up view of motor mounting and first and second jack-shafts. Double V belts are used for the first and last drives. V belts require no tighteners.

times he does quite a bit of custom spraying, and other work to keep men and equipment busy. He also believes in going over his farm machinery whenever there is a rainy day so that all repairs and service work is done long before it is needed in the field. Most of this work is done at home with the aid of a well equipped shop.

Loader Built in Home Shop

The loader was built on the farm, and practically all the machine parts except a couple of V-belt drives, were either salvaged from discarded machinery or purchased from nearby junk dealers. It consists mainly of an eighteen-inch-wide trough mounted over a cut down Ford front axle assembly. It is twelve feet long, and could easily be made longer and wider to handle jobs like stacking bales of hay or straw from a pick-up baler.

The trough has 2x4's for side rails, and an inch thick bottom of matched lumber. This is protected from wear by a covering of thin sheet iron. The iron is also extended around the belt shaft on each end.

Ordinary chain with No. 55 links is used to carry the flights. The belt is driven from the top, which means that the pull is direct from the top sprocket wheels. This is more satisfactory than a drive from the bottom, and also easier to rig up since the bottom end is intended to be used at a low height. The flights are made of hard wood and are 1¼ inches square by a little over fifteen inches long.

A one-horsepower, 1750-R.P.M. motor was used, mainly because it was available. Actually a little less power would do the work adequately, and if any difficulty were experienced all that would be necessary would be to cut down the belt speed a little.

The loader as built is very easy to handle. It is equipped with a long extension cord, and a control switch is mounted on the outside of the trough. Two men can usually wheel it around the place as necessary. Mr. Stoltzfus says that if he couldn't build another one like it, he would not sell it for a thousand dollars. They use it for several jobs but its main function is loading potatoes. The elevator is wheeled into place right back of the grader and scales. The bags are filled and weighed, and set on the elevator which carries them to the back of a truck as fast as the driver can get them out of the way. The loader saves two or three men at least, and makes the work go faster and easier than hand loading.

Electric Hallowe'en Ghost

In December, 1941, you published an article with an illustration showing how we used a three-way floor lamp with small side lamps to make an illuminated Santa Claus. We also use that same floor lamp for a Hallowe'en ghost. We dress it up with the large light as the head and with short drops running down the arms to light up the pumpkins the ghost carries.

We stand this "witch" either in our front hall by the door where all comers get a ghostly welcome, or in the dark hall off the dining room, where all the guests have to pass. It is a sure scare. Even we who make it are frightened because it is so lifelike. It makes a good welcoming spook at anybody's party or a fine adornment for the "spook room."

MRS. MARTIN GRAHAM,
R. 3, Yukon, Okla.

Cooling Off the Spuds

Ventilation of potato storages is solely for the purpose of removing field heat from the stored potatoes plus the warmth generated in the potatoes themselves. It is necessary that air circulate through the potato stack in sufficient volume to exchange warm air with cooler night air, particularly during the early storage season.

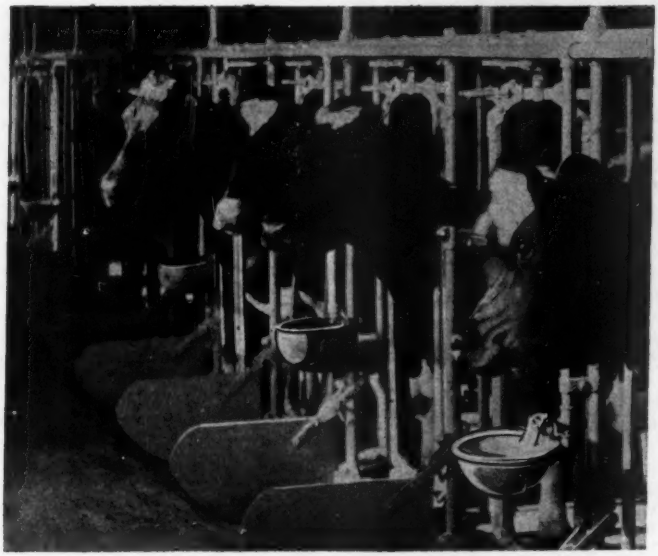
Ventilator intakes should admit air near the floor and in underground storages be boxed in from the ground level down to the basement floor. The outtake ventilators can be located at any point in the storage ceiling or upper wall. Although gravity flue systems having an insulated duct extending beyond the roof ridge are quite satisfactory, fan exhaust systems are more positive and effective. A capacity to insure six to 10 air changes per hour is desirable.—*W. C. Krueger, N. J. Extension Service.*

Water and Your Dairy Cattle

DR. R. R. DYKSTRA
Kansas State College

MILK is approximately 87.2 per cent water and as a cow cannot change the composition of her milk it is necessary, in order that she may secrete milk in a satisfactory volume, that there be an adequate intake of water.

Rain water is the principal source of most of our waters. Contrary to general opinion it is not in the strict sense of the word pure. During its descent to the ground it absorbs substances in the air such as dust, germs and gases. When gathered from roofs, rain water is usually badly polluted.



Surface water as found in shallow puddles, pools and ponds is not safe for animal consumption because it is always badly contaminated with decayed organic matter, especially from manure, as well as germs, worm eggs, and forms of minute animal life. This is especially likely to be the condition in the vicinity of animal habitations. Large ponds, though actually surface water, are not so dangerous from this standpoint in many respects because extraneous matter tends to settle to the bottom to undergo dissolution. On the other hand if the water in large ponds is frequently riled by animals walking in it and by depositing their urine and manure in it, then it may be a source of illness in the herd members consuming it.

Another form of surface water is running water or the water of streams. This is safe for animal consumption only when no other animals are using it for some distance up-stream. It is well known that the bacterial spores of anthrax and blackleg, as well as the germ of brucellosis (Bang's abortion disease), and the virus of hog colera may be carried down stream for a considerable distance. To be safe from these plagues the prudent stock owner keeps his animals away from water sources of this nature. On the other hand if up-stream water traverses wooded areas or grassland with no large groups of animals near by, it is a reasonably safe water for down-stream animals.

Artesian water especially, and spring water to a less extent, are safe for animal consumption. The principal objection to artesian water is that in its subterranean passage through layers of stone, salt and other inorganic compounds it absorbs much of this material so that it becomes hard. Spring-water is frequently no more than surface water and as such may have all the contamination of the latter.

Deep well water with proper safeguarding against the inflow of surface water is one of the safest for animal use. Originally it was surface water, but in order to reach its deep location, harmful material has been filtered out of it because of its passage through sand and gravel beds.

Normally the body of the cow consists of about 60 per cent of water. Water is necessary to dissolve salt and other inorganic chemicals preliminary to their absorption by the tissues of the body; solid food is prepared for digestion by it, and the elimination of waste material is impossible without it. It regulates heat radiation by its skin evaporation. In this connection it is well to emphasize that during the cold winter months it is highly desirable to remove the chill from the drinking water of housed dairy cows. If this is not done much of the energy derived from food is changed to warmth production rather than to milk production.

Water leaves the body in such secretions and excretions as milk, tears, perspiration, in expired air, and through the kidneys as urine. The amount of daily outward passage of fluid depends upon the volume of intake.

A question frequently raised is the time of watering an animal in relation to time of food consumption. There is no good evidence to indicate that the consumption of wholesome water as the need or inclination of the animal moves it should in any manner be curtailed. In fact the combination of an adequate water supply plus salt stimulates the secretion of gastric and pancreatic juices. Salt also tends to direct water to the skin and aids to hold it in the body.

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Electro-Agricultural Equipment for War*

By J. P. SCHAENZER
Special Problems Section, R.E.A.

LAST December, REA conducted a survey of 41 selected electrified farms in Ohio and Indiana to determine the changes that had taken place after electrification. Electric service had been available to them from one to five years, or an average of 3 years and 11 months.

During 1942, the average energy consumption for these 41 farms was 466 kwh per month. Only through studying farms using electricity abundantly and primarily for farming operations is it possible to determine the benefits to be derived from it in increased production, increased capacity for work per individual, and the effect upon labor.

Other changes were taking place on these farms from the time they were electrified to the time the survey was made. The tractors increased, better equipment was acquired, and the war and increased prices undoubtedly also had their effects. Yet every farmer interviewed, without exception, stated that electric service was a major factor in increasing his food production and decreasing his labor in the performance of specific farm chores.

A summary of the facts and figures on the production before and after electrification of these 41 farms follows:

	Number		Percent Increase
	Before	After	
Acres in farms.....	7,586	9,630	27
Acres (irrigated)...	10	15	50
Acres (seed corn)..	105	290	176
Milk cows	356	520	46
Beef cattle (market)	403	489	21
Hogs (market)	3,316	4,487	35
Sheep (western ewes)	....	250	all
Sheep (lambs)	475	475	none
Sheep (feeders) ...	750	....	....
Meat processing (T per yr.)	218	1,768	710
Laying hens	12,530	19,447	55
Chicks (brooded)...	50,025	78,750	57
Chicks (hatched)...	350,000	807,000	130
Turkeys	11,000	23,000	109
Apples (bu. est.)..	2,000	12,000	500
Vegetables (market)	....	....	95

Only a few typical statements from farmers as to how electric service has helped in increasing the size of the farming enterprises and its corresponding effect upon labor follow:

An Ohio farmer states that the milking machine has enabled him to increase his dairy herd from 4 to 19 head. No additional help is required to take care of these additional cows.

An Indiana farmer increased the number of chicks brooded from 400 to 2,150 after electrification. No increase in labor was necessary as two electric brooders are used and water is supplied automatically to drinking fountains.

According to an Ohio farmer, electricity made it possible for him to increase his turkey flock from 11,000 to 23,000 birds. All turkeys are electrically brooded. Prior to electrification, oil was used as a source of heat for brooding and he states that he lost at least one brooder house annually by fire. Because of less labor required by electric brooders, he has been able to more than double his flock but it was only necessary to increase his hired help from three to four and a half men.

Since electrifying his hatchery, an Indiana farmer is producing 800,000 chicks annually as compared with 350,000 before electrification. Prior to electrification, he had five 16,000 egg inncubators. Hot water was used for heating the incubators, with coal

. . . . . (More on page 16)

Feed Mixer Saves Labor. Fred Brust, who manages the Jack Stambaugh farm near Westville, Indiana, mixes all the feed for 150 hogs and some fifteen cows with this mixer powered by a three-horse motor. The mixer is located in a granary which is made of two railroad box cars, one on either side of the service floor. Brust says he finds the electric mixer a great convenience and saver of time and labor. The same 3 hp motor used here was taken outside in corn harvest season and hooked up to the corn elevator.—Geo. R. Harrison.

*Condensed from paper presented at the annual meeting of the American Society of Agricultural Engineers at Purdue University, Lafayette, Indiana.

no large groups of animals near body.

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THE breeding flock of S. C. White Leghorns of W. S. Hannah and Sons at Grand Rapids, Michigan, was established about forty years ago. A reputation has been established for high production of quality eggs from a big bodied, rugged strain of birds. As an example of their production, 1,000 trap-nested pullets produced 89,683 eggs during the four winter months of November, December, January and February, or an average of about 75 per cent.

Hens Drink from Kitchen Sinks

In commenting on their management methods, Arthur J. Hannah says: "All of our pullets are trapnested in our four story laying house. We trapnest 250 to a pen and there are two pens to a floor, or a total of 500 birds on a floor. Our drinking dishes are regular kitchen sinks set on wooden frames. The top edge of the sink is about 12 inches above floor level. A wooden perch surrounds the sink so that the birds can jump up on the perch to drink readily. Water is piped throughout the building so that there is one faucet over each drinking unit, and each sink is equipped with an overflow and a clean-out pipe so that the water can be changed in each unit several times a day.

"One thermostatically controlled electric water heater keeps this water warm even under our most severe winter weather conditions. This is quite a volume of water when you consider that the sink is 36 inches long and 20 inches wide and has about 5 inches of water in it. We much prefer this type of water dish to any on the market.

"We give our birds a thirteen hour day. Lights are turned on at four in the morning and off when it is light enough to see to trapnest. In the afternoon, the lights are turned on as soon as it begins to get a little dark in the pens and run until five o'clock. Each unit is lighted with two 60 watt bulbs, or a total of 240 watts to the floor. This is sufficient because our buildings are all painted white on the inside and we have a good reflective surface.

"We have many special mating pens holding 15 to 20 hens. One water dish with a water warmer is placed in the partition and takes care of two pens. We use 44 heaters regularly during cold weather.

"The average of 22.8 eggs per bird per month is excellent production when one considers the cold here in the North. I know that the increased water consumption brought about by warming the water is at least partly responsible for this good production. It was a number of years ago that we purchased our first electric water heater and we must still be using some of the original ones. When you figure their use over a several year period, your cost is practically nothing."

"V for victory is fine, dear, but I wish you'd forget about it when you're ironing my pants!"

Equipment for War

. . . . . (Here from page 13)

as a source of heat. These have been replaced with two 66,000 egg electric incubators and two hatchers. With this automatic equipment, he has been able to more than double his output of chicks and reduce his labor from four to two men. With the electric incubators, he is securing an average hatch of 80 per cent, while with the coal heated incubators he averaged only 65 per cent. According to him, he is also able to produce much better quality chicks with a 20 per cent higher liveability and with practically no complaints from buyers.

Another Indiana farmer states that it was possible for him to increase his market hogs from 175 to 250 head annually because electricity enabled him to pipe water to the pasture. Five faucets are provided for that purpose.

It should also be noted that during this period 19 new enterprises were started by these farmers.

Even with this large increase in production the number of full-time men employed on these 41 farms decreased from 110 to 103.

"If we win this war and continue to suppress the rights of the individual to develop his latent ability, we will have lost everything that any free individual can fight for regdarless of the military outcome." James F. Lincoln, President Lincoln Electric Co., world's largest producer of arc welding equipment, and founder of a labor-management plan which gives labor a large share of all profits but in proportion to individual ability.

Electrical Housekeeping

Edited by **GAIL MEREDITH**

The Upper Crust

THERE is something about the most modest topping that makes a simple stew take on airs immediately. You know how it is with chicken pie, and even if you aren't deceived for a minute, you fall upon lamb stew with greater gusto when it comes to the table under a thick layer of mashed potatoes baked briefly to brown.

Tiny baking powder biscuits set close together over the top of a beef and kidney stew turn it into company fare. That combination, by the way, is one way to keep up the full food value of our meat dish while cutting its ration points in two.

I have a friend who makes it on request whenever the neighborhood gets together. For a family sized dish she starts out by soaking a small beef kidney in several cups of luke warm salty water for an hour. She says a tablespoon of salt to four cups of water will do. Then she takes off the skin and removes the tubes, covers the kidney with cold water and brings it just to a boil, then lets it simmer for twenty minutes and drains off this water. While it is cooking she cuts a pound of beef chuck into one-inch pieces, and when the kidney is done and cool, she cuts it up too.

Then she puts a heavy skillet on a big burner of her electric range, puts in big lump of fat, and hurries to roll each piece of meat in flour while the fat is heating. When it is hot, she lays in the floured cubes and turns the heat down so they will brown but not char. While they are browning, she adds the slices of one medium sized onion. When the pieces are browned all over, she seasons them well, adds a quarter of a cup of water, and covers the skillet with a tight fitting cover. She lets the meat cook over low heat for about an hour, until it is tender. Low heat is important. The meat must cook very slowly to be tender and appetizing. If there is a simmer burner on your range, that will furnish enough heat for the cooking.

There is a nice cup of broth to season and thicken so she can pour it over the meat when she moves it to a greased casserole. If she has had this stew with biscuits several times hand running, she rolls the dough out and fits it to the casserole for a crust, slitting it here and there to let the steam escape. Either way she bakes it for fifteen minutes in a 450-degree oven.

Shepherd's Pie

A shepherd's pie is a neat way of combining the meat and vegetables in one dish. Some day when you can get a piece of lamb flank, cook the lamb slowly till tender, then take out the bones, trim off the fat, and cut the meat in small pieces. Skim the fat from the broth and use part of it to cook a sliced onion, diced potatoes, and carrots cut small. When they are done, put them with the meat in a baking dish. Season them well and cover with thickened broth. While the vegetables are cooking, cook a batch of potatoes separately, and beat them up in the large bowl of your electric mixer with a little hot milk, plenty of salt, and such butter as you can spare. If you time your operations right, you'll have the potatoes ready to spread thickly over the stew when it is done. Just slip the pie into a 400-degree oven till the peaks of the potato are barely brown, and it is ready for the table.

Those various casseroles of creamed fish or the chopped remnants of yesterday's roast warmed up in its own broth or a cupful of gravy, wear a very different look if you cover them with buttered crumbs, with a crisp layer of corn flakes or potato chips.

They may even pack a good share of the dinner into their trimming if you cover them with a light puff of whipped sweet potato done to a delicate brown; if you top them with a golden crust of corn meal mush; or heap them with cooked rice, served, no doubt, with little dabs of melting butter trickling into the hollows.

about 5 inches of water

forget about it when you're ironing my pants!"

vidual ability.

Be careful to wipe up spilled food promptly.

Soap and Water Plus

IF it is porcelain enamel, it is likely that you can keep it clean most of the time with warm soapy water, a rinse, and a polish with a dry cloth. It is only a few stubborn stains that call for more.

When it is the top of your electric range you are cleaning, you should remember to turn the current off and let the surface cool before you wash it. If you spill something on it while you're cooking, or if grease spatters out of a skillet, don't let the spilled food dry on and harden. Mop it up with a paper towel, a crumpled newspaper, or a dry cloth. It is particularly important to wipe off any milk, vinegar or acid fruit juices as soon as they're spilled on the range. If they stand on the porcelain, they may eat into the surface even of acid resistant material, and leave tiny markings that make the porcelain harder to clean.

For oven linings where grease has baked on, saturate a cloth or paper towel in household ammonia —if you still have some—rub down the walls and leave the cloth in the bottom of the oven over night—racks and units out and the door closed. Next morning the grease will come off more easily.

The enamel on the inside of your refrigerator can be cleaned with a mild solution of baking soda to eliminate odors, and in most cases this is all it needs to keep it clean. It is just as important to clean up after yourself in the refrigerator as on the top of the range. Wiping up spilled food at once saves work—and, if that food is acid, prevents discoloration and damage to the finish.

For the outside of the box, whether it is porcelain or not, use warm soapy water. You do not need abrasives to keep it clean, except perhaps where the rubber gasket gradually rubs a line of black on the cabinet around the door. A mild commercial cleanser will take this off. If the box is not porcelain, the finish will last longer and keep clean easier if you wax it two or three times a year.

You can keep sinks, lavatory and tub white and shining by washing them with soapy water, rinsing them with clear, and drying them off for a polish. You need to keep an eye out to see that no one leaves half an orange face down on the drain board, or a puddle of spilled milk trickling languidly down the drain. Once the surface is marred it is harder to clean. The thin black lines metal leaves on white enamel will scour off with a fine cleanser.

For badly soiled tubs, scour lightly with whiting powder wet with kerosene, or a non-scratching commercial cleanser. Be sure to rinse the bath tub well after you scour it.

Do not try to scrub off iron stains from enamel. Dissolve them away with an oxalic acid solution. The recommendation of a home management specialist from the University of Illinois is 1 tsp. of oxalic acid crystals in one cup of hot water. After applying this to the stain, rinse with an ammonia solution made with one cup of 10% ammonia and two quarts of water. Then rinse well with clear water.

Meeting the Brown-Out

Perhaps you can't imagine dairy farmers setting up signs along the highway: "Please drink less milk," nor organizations of poultrymen starting a campaign to curb the eating of eggs. But we are living in just such a topsy turvy world.

Last month the utility companies of the country began a series of advertisements urging people not to use so much electricity. Use what you need, they say, but watch waste constantly. This is a patriotic effort of the power companies to do their part in the national movement to save coal.

It is perfectly possible for most households to begin their saving with the current they use for lighting, and to make it without reducing the usable light in their homes by a single foot-candle.

If you are interested in making such savings, you can begin by checking the bulbs you use. Buy bulbs made by a reputable manufacturer and be sure that their voltage is correct for the line you are on. Ask at the local office of your power company. Discard blackened bulbs even before they burn out. The darkened glass absorbs light you want on your book or sewing. Colored bulbs have the same effect; they may use up a third of the light they should be producing for their wattage.

Dirty, dusty bulbs steal light, too. So do the diffusing bowls that are allowed to gather dust and insects for months. Clean bulbs, shades, and fixtures regularly and you will get more of the light you are buying.

You will get more light from a 100-watt bulb than you will from four 25-watt bulbs. The price of the bulb will be less, and the cost of operation the same.

Light Surfaces Reflect Light

So much for bulbs. You know that light colored walls and ceilings always make a room seem lighter. It actually *is*, because the light surfaces reflect the light instead of absorbing it. You can increase the usable light from your lamp by replacing dark shade linings with white or very light ones. In the July issue of *The Magazine of Light*, there are two suggestions for replacing dark linings of a lamp shade with white. They are simple enough for anyone to follow easily.

If you have a very dense or opaque shade, give it a white lining with white shoe polish. It dries quickly and makes an effective if not a very smooth surface. Put a coat on with a sponge or cloth, they say, then pat on a second coat when the first is thoroughly dry.

For paper or parchment shades, use a household spray gun to give the inside a coat of casein paint.

The shape of the shade also affects the amount of usable light that comes from your lamp. A straight shade gives a rather restricted spread of light. A flaring shade on the same lamp gives you more light farther away.

One very, very simple way of increasing the light where you

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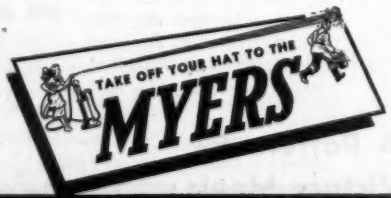

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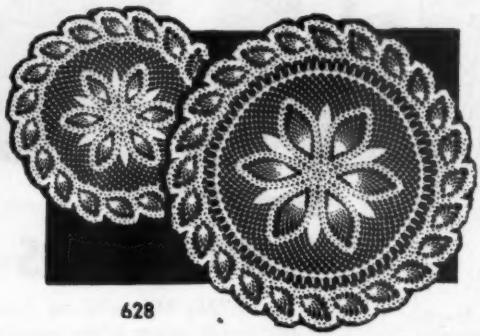


want it is by moving the lamp as close as you can to the work to be done. Perhaps this will mean rearranging the furniture in the living room or changing a lamp where the children study. If a lamp shines over the back of the davenport on your magazine and down on a table where one of the girls is writing her history paper, that is making one do the work of two in an effective and economical way.

Don't cut down on your light, but get all you can from the current you use. If you do, first thing you know, you'll find you may be getting enough with less.

A Pattern for Victory Meals

There was a high wind last night, and this morning a thin crackle of ice glistened in the shallow puddles left by yesterday's rain. It will be warm again, but for most of us the garden season is definitely past. Meal planning must be done in the kitchen now and not along a garden path where ripening vegetables all but invite themselves in to dinner.

Perhaps you have had it there right along, but if you haven't, there couldn't be a better time than today to tack up on the inside of a handy cupboard door a pattern for meals that will contain those protective foods you want your family to have. It is not a menu planner, but a measuring stick by which to size up your menus. How do your daily meals measure up?

Milk and Milk Products

Drink it and use it in cooking. 3 to 4 cups for each child; a pint for each adult. Cheese.

Fruits and Vegetables

Oranges, tomatoes, or grapefruit or raw cabbage, or salad greens for one of the meals.

The vegetables should include one green, leafy or yellow.

Some Raw: Some Cooked

One serving of potato, white or sweet. Such other vegetables and fruits as are in season, or you have canned, dried, frozen or stored in root cellars against the winter.

Eggs

One egg a day, at least 3 or 4 a week. This may include dishes made with eggs.

Meat, Fish or Poultry

One serving of one of these a day is desirable. Serve liver once a week. Substitute dried beans, peas, or nuts now and then.

Bread and Cereal

One serving of cereal, preferably of whole grain each day. Bread from whole grain or enriched flour for each meal.

Butter and Other Spreads

Butter, vitamin rich fats, and peanut butter.

Cooking Cords

Cords multiply fast in electric kitchens. You can start out with a cord for the iron and another for the percolater, but first thing you know, you've added one for the toaster, another for a waffle iron, an extra heavy one for the roaster, and another for a biscuit baker. It is no time at all before you have half a dozen to dispose of conveniently and safely.

When we found this had happened to us, my husband made me a place for my cords on the back of a cabinet door. It is such a

increasing the light where you

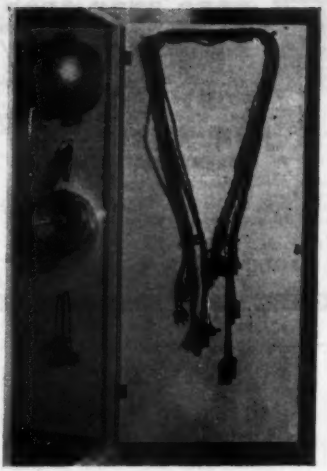
Address 35WS3

simple arrangement I would hesitate to mention it if I hadn't seen so many cords bundled into drawers with no proper care.

He screwed four wardrobe hooks into the door. The upper hooks are about a foot apart; the two lower ones he set close together and turned so they face each other. The curved metal hooks make little bays that keep the cords from swinging.

Saves Time and Temper

This arrangement saves a not inconsiderable amount of time and temper. When I start to iron, I know the cord for the iron is not in the top drawer of the left-hand cabinet, not on the bottom shelf at the right. I know I didn't bunch it up and push it behind the iron when I put it away. I know it is hanging right there from those hooks. I always put them away when I'm through with them because it is really easier to do it than to leave them around. With all the cords there, I never have to waste time hunting for the one I need.



The cord I want is on the hook.

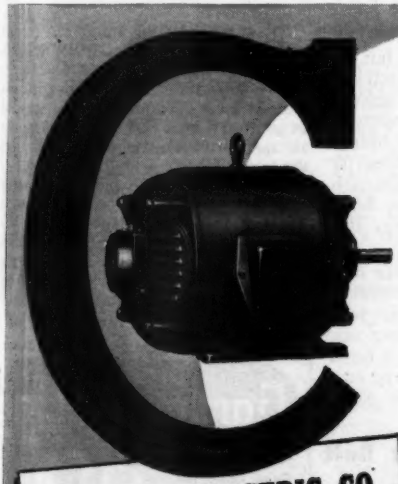
Besides being convenient for me, it is much better for the cords. They can't be bruised, twisted, or broken. They just hang there on the door in a wide loop that doesn't twist those fine wires inside the fabric of the cord.

A Supplemental Farm Industry

By CAROLINE S. COLEMAN

ALTHOUGH he is probably too busy to talk about it, electricity helps one rural South Carolinian to make a tidy sum in an unusual way. J. B. Lovelace of Princeton, S. C., makes and sells mattresses. There is nothing unique in mattresses, but the product made by Mr. Lovelace is unique. He lives in the country, and in one room fitted up with equipment for the work, he makes his mattresses by hand. The only machinery he uses is an electric picking or fluffing machine, and an electric sewing machine.

From a nearby ginnery where his neighbors haul cotton to be ginned he obtains cotton. But cotton in this state is not ready to go into the mattress. The cotton which may be littered with trash when it goes into the maw of the little flluffing machine, is



Lick Your Man-Power Problem
With the Horsepower of
CENTURY RS Motors

The tough jobs — on thousands of farms — formerly requiring hand labor, are seldom thought of as such since Century Motors were installed.

They're especially well adapted to farm use—developing high starting torque to start the toughest loads, yet using less starting current and producing least light flicker.

Century Type RS Motors will stay steadily on the job —serve you 24 hours a day—no matter what the task required. They'll help you to produce your increased quota of "Food For Freedom" when faced with a shortage of farm labor.

Specify Century Motors on the equipment you buy. Select Century Motors yourself to speed up heavy chores.

325

CENTURY ELECTRIC CO.
1806 Pine Street St. Louis, Missouri
Offices and Stock Points in Principal Cities
Century MOTORS

One of the Largest EXCLUSIVE Motor and Generator Manufacturers in the World

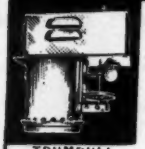
must be done in the kitchen now and not along a garden path where

Eggs

One egg a day, at least 3 or 4 a

a place for my cords on the back of a cabinet door. It is such a

Save up to $20.00 ON A FULL-SIZE ELECTRIC BROODER



Electricity plus Trumbull Equipment can make your poultry far more profitable. The two items shown here are typical. The Brooderator helps you to raise healthier, stronger chicks, and you save up to $20.00 by making your own hover. The Water Warmer aids you in producing more eggs during the season when prices are highest. Both items are built to Trumbull standards, famous for half a century.

TRUMBULL BROODERATOR
Basic Unit—Capacity: 300 to 400 Chicks. $19.80

EGGS, EGGS, EGGS, THROUGHOUT THE WINTER!

Even below zero weather hens won't stop laying if supplied with pure water at 50° F.

TRUMBULL WATER WARMER
Thermostatically Controlled

$3.66

Write us for informative literature.

THE TRUMBULL ELECTRIC MFG. CO.
1012 Woodford Avenue Plainville, Conn.

A GENERAL ELECTRIC ORGANIZATION

picked to bits and blown out of the machine as soft and fluffy "Southern down."

Bolts of cotton cloth for ticking, quantities of strong thread and boxes of buttons line the shelves of the room where the mattresses are made. Mrs. Lovelace stitches up the ticking for mattress covers. "It would take a long time to get them stitched with a machine not electrically operated," said Mrs. Lovelace," for the ticking is heavy material.

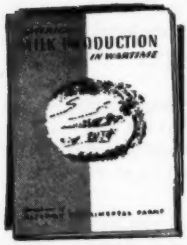
When the cotton is thoroughly "picked" and the cover made, layers of cotton are placed with inner springs between, and the side opening of the cover sewed together. Mr. Lovelace then goes over the mattress with a huge picking needle, punching the uneven places into shape, smoothing and rounding off the sides.

The finished mattresses are attractive and his customers say, "It is a satisfaction to know just what is in the mattress we sleep on. He sells his product in his own and nearby communities, and always has orders for as many as he has time to make. He refuses to go into the business on a larger scale. "It is just a home project," says Mr. Lovelace. His margin of profit is small, but he hires no help and his electrical equipment requires little upkeep and is not expensive to operate. In this fine neighborly community where honesty and integrity are counted above wealth, the mattress making on the farm beats working in a city factory, this family thinks.

EDITOR'S NOTE. *Does this suggest anything you might do in your community? What do your town or country neighbors use that you could make? Such home industries may be well worth considering in your after-war plans.*

RITE-WAY Milkers
A Record of Growth

During two decades of steady growth, Rite-Way Mechanical Milkers have earned Nation-wide reputation among dairy farmers by dependable efficiency—in easy, natural milking and in simple, sturdy construction and quality—from vacuum motor to inflations. Our large factory makes mechanical milkers exclusively. Ask your dealer to place order for earliest possible delivery of Rite-Way Milker.



This new booklet—*"America's Milk Production in Wartime"* gives you simplest, quickest approved methods for producing better quality milk—avoiding spoilage and loss of milk revenue.

Write us now for your copy FREE

RITE-WAY PRODUCTS CO.
1247-49 Belmont Ave., Chicago, Ill.
Eastern Branch: Syracuse, N. Y.
Pacific Coast Branch: Oakland, Cal.
In Canada: Massey-Harris Co., Toronto

Take Care of That Belt

Much of farm power transmission is by belt, and conservation of belts is very necessary now with the scarcity of canvas and rubber. A loose belt wears out quickly because of slippage. If it's too tight, both the belt and bearings will be ruined. On close-coupled equipment, belts should have a tension of approximately 40 pounds pull per inch width of belt.

An appreciable sag on long belts is desirable; pulling them straight results in excessive tension. Slippage of belts may be due to too narrow a belt, pulleys that are too small, too stiff a belt or not enough tension. Use sticky belt dressing only as a last resort.

Condition leather belts only with neatsfoot oil. Nothing else should ever be used. Apply sparingly on flesh side of belt. Run leather belts with hair side to pulley. Rubber belts can be conditioned by applying a light film of castor oil, sparingly. A very thin paint of boiled linseed oil and equal parts of litharge and red lead is also effective. For canvas belts, a very thin mixture of red lead and raw linseed oil is recommended.

W. C. Krueger, N. J. Extension Service.

Furnaces and Stoves

Every furnace should set on a concrete or earth floor.

The pipe leading from the furnace to the chimney should be free of rust holes, should be at least 18 inches from the floor above, and securely held in place.

All stoves should stand on metal floor coverings extending 18 inches in front of the feed door.

A combustible wall, if not more than 24 inches from the stove, should be protected by a sheet of metal, with air space between the metal sheet and the wall.

See that all stove pipes are snug and tight. If the pipe passes through floor or partition, it should be protected by a safety ventilating thimble.

A stove pipe should never enter the chimney in an unused room or attic. Wire fire screen should be kept in front of all open fireplace in use.

Get A Gardner Hi-Line Controller

Save time, get set for more milk, beef or pork production with a Gardner hi-shock hi-line controller — the best engineered electric fence unit. Thousands are in nation-wide use, many have given six years of successful service. Ask your dealer today, or write direct for free folder.

Gardner Mfg. Co.
5303 Kansas St. Horicon, Wis.

For Sale Now!

Farmer's Exchange Helps Solve Equipment Problem

By RAYMOND DONOVAN
Lincoln Park, N. J.

WHEN Bill Danton, of Cainbridge Road in Towaco, N. J., discovered that he couldn't buy electric wire, sockets, etc., of the type he wanted even with OPA permission, he put on his thinking cap and solved the problem of getting what he wanted and also solved the problem for a lot of other farmers in his vicinity.

Danton spoke to several of his farmer friends about establishing an exchange post. They all heartily agreed because he found that most of them were struggling along without electrical and other equipment that they sorely needed because it was impossible to buy the stuff at any price and in several cases it would be weeks before the goods could be delivered.

Great Variety to Trade

The men decided on a meeting one Saturday morning at Danton's farm. For some days before the meeting all the members of the exchange took stock of old electrical and other equipment on their farms of which they had no further need. This included water heaters for chickens, old motors, electric brooders, wire, sockets, old electric water pumps that could be made to run with a little repair, etc., etc. In the non-electrical line came chicken wire, tractor parts, spades, shovels, rakes, plows, etc.

On the appointed Saturday morning it rained pretty hard but eight of the ten farmers met in Danton's barn with quite a stockpile of stuff to exchange.

Abe Striklen, of Harvast Lane, Montville, N. J., made the very first trade. He discovered that one of the other farmers wanted to exchange a tractor part that Abe had been trying for weeks to buy from the stores. The part was almost new. He also got a half-horse motor that he sorely needed in exchange for two rolls of galvanized chicken wire for which he had no need.

Mr. Danton got his wire and sockets in exchange for some second-hand lumber.

There wasn't a man at the meeting that didn't make some exchange for something he badly needed on his farm. And so the first meeting was a huge success but following meetings were to prove more so. The number of members increased with every meeting until now anywhere from thirty to fifty farmers put in an appearance at Danton's barn for the meetings which are held every second Saturday.

Horses have been traded for tractors. Electric milk coolers have been traded for cows. In one case an electric refrigerator was traded for an electric stove. Neither piece of equipment had been in use until the trade was made but now they're both doing their bit.

At all meetings the trading is brisk but very friendly. No one tries to get the better of the other fellow. There is a lot of good natured kidding and joking and everyone goes home satisfied that he has made a good deal because even if he has exchanged an electric motor for which he has no further use for a roll of chicken wire or a toaster or what have you that he can use immediately he's made a first class exchange.

Farmer's Dollars & Debts

"Today, in relation to general price levels, the dollar is low in value. Consider these facts:

"An REA debt of $10,000 contracted in November, 1938, represented the equivalent of about 25,000 bushels of corn. Farmers would have had to sell that much corn to receive $10,000. Today the picture has changed. That same $10,000 debt that represented 25,000 bushels of corn in November, 1938, can now be paid back by selling only about 10,000 bushels of corn.

"After the war the situation may shift back again. It may take a lot more corn or cotton,

Choose F & W FOR DEPENDABLE WATER SUPPLY

Designed and engineered to deliver more water at less cost, new F & W centrifugal pumps give unfailing service, can be a big help to you in producing more food for Victory.

Compact, close coupled units have large capacity. Fewer moving parts assure quiet, dependable operation, longer life. Sizes and types to meet all needs on farms . . . for shallow wells . . . for deep wells.

MORE FOOD A VITAL NEED

Although the number we can manufacture is necessarily limited, farmers qualify under priority rules to obtain F & W systems, because of the vital importance of water in the food producing program. See your dealer promptly or write us for further information.

FLINT & WALLING MFG. CO., INC.
1095 OAK ST., KENDALLVILLE, IND.

have a tension of approximately

5303 Kansas St. Horicon, Wis.

IMPROVED! —A MILL THAT GIVES YOU THE PROVED VIKING ADVANTAGES

1 **LABOR-FREE GRINDING:** Viking Exclusive self-feeding mechanism makes automatic grinding possible—All you have to do is start the mill and go on with your regular work.

2 **LOW-COST GRINDING:** Actually you, too, can grind your feed for as little as 1¢ per 100 pounds.

3 **FRESH FEED GRINDING:** Because it takes so little of your time for grinding, you will want to grind daily. Give your stock the benefit of freshly ground feed—more nutritive and non-spoiling.

Your letter to us will bring you complete details and many interesting facts about grinding. WRITE IT NOW.

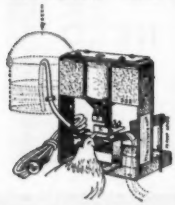
VIKING MANUFACTURING COMPANY
215 EAST WASHINGTON ST. JACKSON, MICHIGAN

milk or poultry to pay off old debts than it does today. That's why this is a good time to reduce old debts as much as possible."

ROBERT B. CRAIG,
Former Deputy Administrator, REA.

Close-grained gray iron is the most widely used material for piston rings because it withstands wear and retains its physical properties under temperature, pressure and lubrication changes.

ELIMINATE PICKING!
REDUCE FEED LOSS!
INCREASE BIRD QUALITY!



Use a LYON ELECTRIC DEBEAKER. Developed after tests with thousands of birds. Method approved by a number of leading poultrymen and authorities. You can forget about pick guards, shields, helmets, etc., by treating more than 100 birds per hour with a Lyon Debeaker. This Lyon apparatus reduces mortality, labor and feed expense. It costs less than $15.00.

Send for Details.

LYON RURAL ELECTRIC CO.
SAN DIEGO, CALIF.
"Headquarters for Electric Brooder Assemblies"

More About De-Beaking

Cannibalism Controlled. A San Diego Field Man Tells What He Has Learned About Electro-Amputation of Beaks and How it Helps in Flock Management

By **BILL HEIDL**
In San Diego Poultry Journal

THERE have been a great number of devices and suggestions offered to poultrymen on cannibalism control. Now San Diego County (California) has developed a new method of control which has been tried and has proven very satisfactory. This method of control is to burn the upper beak of the bird.

Poultrymen have known for a long time that picking could be controlled by cutting the upper beak of a chicken, but this has never proven very satisfactory because the beak would soon grow again or if it were cut back far enough to really do some good, the bird would bleed to death. If the beak is burned back about one quarter of an inch, the heat will cauterize. There will be no bleeding and the beak will not grow again for at least three months and in most cases will take much longer than three months to reach normal growth.

San Diego County Takes Lead in Control Method

Cannibalism control is particularly beneficial to poultrymen at this time as feeding rations are not up to standard due to war conditions and picking is apt to become a worse curse than ever. Debeaking is coming into general use in San Diego, this county taking the lead in the use of this control method.

Fryer plant operators have found that picking is eliminated 100 per cent. This means that there will be no mortality from picking and no birds will have to be marketed as seconds because of bare backs or pin backs. All birds that are debeaked at about five weeks of age will be completely feathered even to the tail feathers when sent to the market as fryers.

Most fryer plants using this control method, burn the beaks of their birds as they are moved from the brooding unit. Debeaking in no way will retard the bir from eating as field observation have shown that birds will star eating within five minutes afte being treated. Poultry dealer have reported that the best quality birds come from fryer plants that practice debeaking; and that small

Cut off about one-quarter inch of upper mandible

and large birds are all well filled out.

Another good feature of beak burning is the fact that birds cannot pick over the mash ration. This means that both strong birds and weaklings will get the same ration as long as there is plenty of feed in the hopper. It has also been found that there is very little feed wasted as debeaked birds cannot bill mash out of the hopper.

As birds cannot pick feathers, they never get the habit of eating feathers and thereby do not fill the crop and gizzard with

"Keep 'em Frying"

If you are using a Monarch Range write for free booklet entitled "How to Care for your Monarch Range"—mentioning the kind of fuel you use.

MALLEABLE IRON RANGE CO.
1243 Lake St. Beaver Dam, Wis.

MONARCH RANGES
are built to last

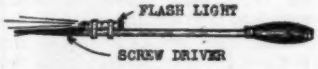
anything but good nourishing feed. Many blisters and torn backs will also be eliminated due to the fact that debeaked birds will be much quieter and more peaceful. This is very important in battery raised birds.

Considerable work has also been done on laying stock and this has proven very successful. There seems to be no definite time as to when laying stock should be debeaked. Up to the present time, debeaking has been used more as a cure than as a preventative. Where it has been used as a cure, losses have stopped immediately.

The originator of this picking control method, a Mr. T. E. Wolfe of Santee, California, reports that he has debeaked his layers for the last five years and has had practically no loss from pick outs in that time. Many flocks of layers in this territory have not been debeaked until they were well into egg production. Debeaking in these cases has in no way retarded food consumption or egg production. Debeaking should eliminate the use of all salves.

Now I Can Insert Screws in the Dark

Here is a handy kink for use in the daytime as well as at night. Many times I have had difficulty in "seeing the slot" in the head of



a screw and have been obliged to grope and feel around for it.

Flash lamps are now made in such extremely small sizes that I hit upon the idea of fastening a flash lamp to the shank of a screwdriver as indicated in the sketch. The light accomplishes its purpose very well. With this arrangement I can now plainly see the screw slot at any time—night or day.

Some time ago I did the same thing with an oil can, fastening the flash lamp in such a position that it lighted the end of the spout. I found it to be a great time and oil saver, but it did not occur to me at the time that the same idea could be applied so admirably to a screwdriver.

W. F. SCHAPHORST.

Questions and Answers

Homemade Concrete Mixer

▶**Question:** *Can you tell me how to make a cement mixer out of an old 50-gallon drum and automobile parts? I want one which does not need to be stopped to fill or empty and can be operated by a lever for emptying.* B. H. G., W. Va.

▶**Answer:** If any of our readers have built one, we will be glad to pay you for a description of the mixer. Sketches or photos of the mixer, or both, would help.

Home Freezer Size, Etc.

▶**Question:** *Several of us are greatly interested in home locker rooms. What information can you give us on something that can be used at home for this purpose? How large a unit is necessary, where can it be bought and approximately how much does it cost? How do you need to prepare the space confined to the locker room before installing the unit? Could you use a unit from a meat counter for this purpose? If we cannot buy units now because of war restrictions how could we make something that would or could be used until after the war? How much space is required per person for such a room, and can all kinds of fruits and vegetables be placed in this storage and what preparation is necessary before freezing?*

A. O., Ohio

Answer: You have given us a real job of question answering. We will do the best we can.

The proper size for home freezer lockers is a moot question. The range is anywhere from 4 cu. ft. to 70 cu. ft. The most popular one family units vary from 16 to 24 cu. ft. in actual storage capacity.

Home freezers cannot be purchased unless you can find some dealer who has one in stock. The Government has prohibited their manufacture during war-time. 15 to 24 cu. ft. boxes formerly cost from $300 to $600.

We had an article on an excellent homemade freezer in our May issue of ELECTRICITY ON THE FARM. A refrigerating unit from a meat coun-

VOGEL
FROST-PROOF HYDRANTS
● Ideal for farms
● Will never freeze
● More than 50,000 in use
JOSEPH A. VOGEL COMPANY
Wilmington, Delaware

Your nearest supply house handles Vogel hydrants or writeusdirect for complete information.

For successful electric fencing . . .
DEPEND on PRIME Hi-Line Controller

The Prime Mfg. Co.
Milwaukee ▪ Wisconsin

Make sure *your* electric fence *can* do the job. And get the added assurance of Underwriters' approval for safety and Prime's ten-year record of leadership . . . *See your Prime dealer now.*

ter if of ¼ to 1 hp. in size would be satisfactory for cooling the cabinet.

All kinds of fruits and vegetables may be stored in one freezing cabinet. Those who have used them say that quality of frozen products are excellent. I would suggest that you write to the New York Agricultural Experiment Station, Geneva, New York, for their bulletin on Home Freezing of Fruits and Vegetables. It is the best booklet I know of on the subject and gives detailed information about preparation, packaging and freezing different products.

Auto Generator as 110 Volt Motor

▶ **Question:** *I would like to know if it is possible to change an automobile generator into a small electric motor. If you have any plans for the same, please send them to me.*
B. G., Oreg.

▶ **Answer:** Automobile generators are designed for six volt current and could not be used on a lighting circuit. If you want a motor to operate on direct current from a storage battery, I would suggest using the starting motor on a car rather than trying to change a generator into a DC motor.

Poultry Water Warmer

▶ **Question:** *I have available some No. 18 Nichrome wire. Can you tell me how to make an immersion heater suitable to put in a 3-gal. or 5-gal. poultry waterer? How is the best way to seal such a heater so it will be water-tight? What would the wattage be? I had in mind making it of such low wattage that it would not need any kind of automatic control.* G. R., Mass.

▶ **Answer:** I would not advise you to attempt to build an immersion heater from your Nichrome wire. It is too difficult to make such a heater water-tight and shock-proof. You can make a heater which will be equally effective and less trouble from an ordinary lamp bulb.

One of the simplest ways of providing a heater is to cut a hole in the bottom of your waterer large enough for a lamp bulb to slip through then invert a can over the hole and solder it in place. The lamp bulb can be held up in the can from beneath and the can extending up into the water will transfer the heat directly to it. You can change the size of bulb to fit different weather conditions.

If you do not wish to make a hole in the bottom of the container you can put the lamp bulb inside a jar or tall can, fill around it with sand and support the can in the container so the sand will not get wet.

Electric Water Heaters are going to be available this fall and of course they are most satisfactory because they have a thermostatic control.

Fly Trap Plans. Dangerous in Dust

▶ **Question:** *Could you send me the building design of an electric fly trap? Are they dangerous in dust?*
L. L. F., Mo.

▶ **Answer:** The electric fly trap is a piece of equipment which is somewhat in the same category as the electric fence from the standpoint of safety. It depends upon a high voltage discharge of electricity for killing the flies. Such a trap involves special insulators and a transformer designed for the high voltage and is not a piece of equipment which we would recommend building at home or for which we could give you plans.

Since fly traps produce a high potential arc in killing flies they are definitely dangerous to use in an explosive dust mixture.

Knob and Tube Wiring Chart

On the opposite page is a chart showing all the various details of connections, splices, turns, spacing, outlets, clearances, etc., for concealed knob and tube wiring and also for open cleat work. Knob and tube wiring was formerly the most prevalent type. It is still very good wiring, vouched for by many contractors IF PROPERLY INSTALLED AND MAINTAINED. It uses very little critical material other than wire. This chart is printed because we believe it will be helpful to many of our readers. The same chart 16″ x 18″ which has incorporated the 1940 Code revisions and with marginal notes explaining the drawings, is available from James Steel Mahon, 201 North Wells Street, Chicago, Ill. Price 25c. Send remittances to Mr. Mahon.

New Publications

(Publications are obtainable from the addresses given in the description. Some states make small charges for bulletins sent outside the state.)

• AN ELEVATOR FOR EAR CORN. Reprint from Mich. Ag. Exp. Sta. Quarterly Bulletin, Vol. 25, No. 4. East Lansing, Mich. 7 p., illus. Tells how to build a single chain type drag elevator 11 inches wide. Dimensions, bill of materials, good pictures.

• THE DELAVAL HANDBOOK OF MILKING. DeLaval Separator Co., N. Y., Chicago or San Francisco. 36 pp., illus. Milk production explained, hand milking development of machine milking, operation, cleaning and care of the milker, control of mastitis, types of DeLaval milkers.

• FREEZING VEGETABLES AND FRUITS. Bul. 478, Colo. Ag. Exp. Sta., Fort Collins, Colo. 16pp. Varieties for Colo., selection, preparation, packaging and freezing. Tables telling how.

• HOUSEHOLD EQUIPMENT—Its Care & Repair. Publication 273, Exten. Service, Univ. of Tenn., Knoxville, Tenn. 36 pp. illus. Concise "1, 2, 3, How to do it" instructions about fuses, cords, plugs, simple plumbing and about 20 appliances including ranges and refrigerators. A clear, understandable handbook.

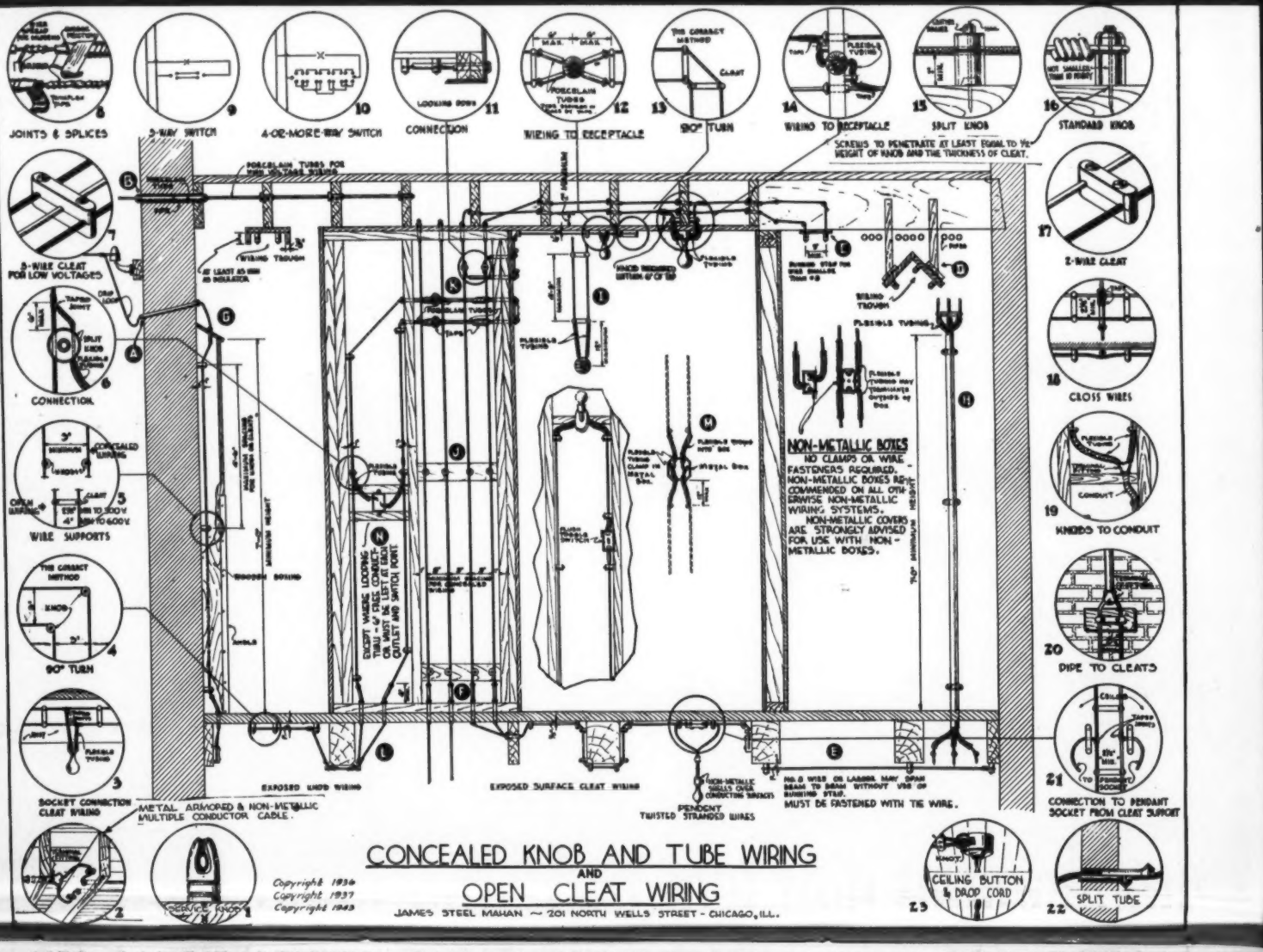
• HOME DRYING WITH W.S.C. DEHYDRATOR. Pop. Bull. 172, Exp. Sta., Wash. State College, Pullman, Wash. Methods of drying, preparation of fruit and vegetables, plans for WSC home dehydrator heated with iron wire heating element.

• TEST CODE FOR CENTRIFUGAL AND ROTARY PUMPS. 32 pp.; price 50c. Hydraulic Institute, 90 West St., New York City. Standards for testing large pumps such as irrigation pumps. Measurement of water, pressure, heads; calculations.

• THE GOOD EARTH—Or Isn't It? A little 20 p. pocket booklet containing a lot of good information for anyone interested in his soil. Tells of needed lime, nitrogen, phosphorus and potash in fertile soil and how to test for them to see whether they are present. Gives a scale of what is meant by pH numbers with a list of pH preferences of many vegetables and flowers. Explains active elements in fertilizers and compounding them. Also contains a chart of vitamin and mineral contents of different vegetables. The book also advertises soil testing kits for sale at $4.75 to $22.50. Booklet free from Sudbury Soil Testing Laboratory, South Sudbury, Mass.

CLASSIFIED ADVERTISING

POULTRY TIME SWITCHES. FOUR MODELS, from $12 to $18. All-electric or spring-wound. With or without "dimmer circuit". Write for information. AUTOMATIC ELECTRIC MANUFACTURING COMPANY, MANKATO, MINNESOTA.


JOINTS & SPLICES
3-WAY SWITCH
4-OR-MORE-WAY SWITCH
CONNECTION
WIRING TO RECEPTACLE
90° TURN
WIRING TO RECEPTACLE
SPLIT KNOB
STANDARD KNOB
2-WIRE CLEAT FOR LOW VOLTAGES
CONNECTION
WIRE SUPPORTS
90° TURN
SOCKET CONNECTION CLEAT WIRING
CLEAT KNOB
2-WIRE CLEAT
CROSS WIRES
KNOBS TO CONDUIT
PIPE TO CLEATS
CONNECTION TO PENDANT SOCKET FROM CLEAT SUPPORT
CEILING BUTTON & DROP CORD
SPLIT TUBE
PORCELAIN TUBES FOR TWO VOLTAGE WIRING
WIRING TROUGH
FLEXIBLE TUBING
SCREWS TO PENETRATE AT LEAST FIGURAL TO WEIGHT OF KNOB AND THE THICKNESS OF CLEAT.
NON-METALLIC BOXES
NO CLAMPS OR WIRE FASTENERS REQUIRED. NON-METALLIC BOXES RECOMMENDED ON ALL OTHERWISE NON-METALLIC WIRING SYSTEMS.
NON-METALLIC COVERS ARE STRONGLY ADVISED FOR USE WITH NON-METALLIC BOXES.
EXCEPT WHERE LOOPING THROUGH AT FIXTURE OUTLET NO SWITCH PORT
EXPOSED KNOB WIRING
EXPOSED SURFACE CLEAT WIRING
PENDENT TWISTED STRANDED WIRES
NO. 8 WIRE OR LARGER MAY SPAN BEAM TO BEAM WITHOUT USE OF RUNNING STRIP. MUST BE FASTENED WITH TIE WIRE.
METAL ARMORED & NON-METALLIC MULTIPLE CONDUCTOR CABLE.

CONCEALED KNOB AND TUBE WIRING
AND
OPEN CLEAT WIRING

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